

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

---

1. (currently amended): An image display method, which has an output brightness characteristic in which a logarithmic value of an output brightness becomes smaller as a value of an input image signal becomes larger, for displaying a visible image that said input image signal represents according to said output brightness characteristic, the image display method comprising the step of:

C、 setting said output brightness characteristic so that a rate of change, which represents a change in a logarithmic value of said output brightness with respect to a change in the value of said input image signal ~~value~~, in a ~~low-signal-value~~ first region of said image signal which is below a boundary value  $S_a$  becomes smaller than that in ~~an intermediate and high-signal-value~~ a second region of said input image signal which is above a boundary value  $S_a$ ;

wherein ~~[[a]]~~ the boundary value  $S_a$  between the ~~low-signal-value~~ first region and the ~~intermediate and high-signal-value~~ second region is represented by the following equation:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

where  $S_{\max}$  is the maximum value of the image signal in the output brightness ~~characteristic~~ characteristic.

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

2. (currently amended): The image display method as set forth in claim 1, wherein said output brightness characteristic is approximately linear over approximately the entire ~~intermediate and high signal value~~ second region.

3. (currently amended): The image display method as set forth in claim 1, wherein ~~a boundary value  $S_a$  between said low signal value region and said intermediate and high signal value region, and~~ a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$  ~~[[are]]~~ is represented by the following equation~~[[s]]~~:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

where  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic and~~  $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output brightness characteristic.

4. (currently amended): The image display method as set forth in claim 2, wherein ~~a boundary value  $S_a$  between said low signal value region and said intermediate and high signal value region, and~~ a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$  ~~[[are]]~~ is represented by the following equation~~[[s]]~~:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

where  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic and~~  
 $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output brightness characteristic.

5. (currently amended): The image display method as set forth in claim 1, wherein said change rate in said ~~intermediate and high signal value~~ second region is represented by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

C, where  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic and~~  
 $G$  is said change rate.

6. (currently amended): The image display method as set forth in claim 2, wherein said change rate in said ~~intermediate and high signal value~~ second region is represented by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

where  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic and~~  
 $G$  is said change rate.

7. (currently amended): The image display method as set forth in claim 3, wherein said change rate in said ~~intermediate and high signal value~~ second region is represented by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

where ~~S<sub>max</sub> is the maximum value of the image signal in said output brightness characteristic~~  
and G is said change rate.

8. (currently amended): The image display method as set forth in claim 1, wherein said output brightness characteristic is set so that said change rate in ~~the high-signal-value~~ a first portion of the second region of said image signal becomes greater than that in ~~the intermediate signal-value~~ a second portion of the second region of said image signal.

9. (currently amended): The image display method as set forth in claim 8, wherein said output brightness characteristic is approximately linear over approximately the entire ~~intermediate-signal-value~~ second portion of the second region and over approximately the entire ~~high-signal-value~~ first portion of the second region.

10. (currently amended): The image display method as set forth in claim 8, wherein ~~a boundary value S<sub>a</sub> between said low-signal-value region and said intermediate and high-signal value region,~~ a logarithmic value Y(S<sub>a</sub>) of said output brightness at said boundary value S<sub>a</sub>, a boundary value S<sub>b</sub> between said ~~intermediate-signal-value~~ second portion of the second region and said ~~high-signal-value~~ first portion of the second region, and a logarithmic value Y(S<sub>b</sub>) of said output brightness at said boundary value S<sub>b</sub> are represented by the following equations:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$0.70 \times S_{\max} \leq S_b \leq 1.00 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

$$Y_{\max} - 2.15 \leq Y(S_b) \leq Y_{\max} - 1.95$$

where  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic and~~  
 $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output brightness characteristic.

11. (currently amended): The image display method as set forth in claim 9, wherein  
~~a boundary value  $S_a$  between said low signal value region and said intermediate and high signal~~  
~~value region, a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$ , a~~  
boundary value  $S_b$  between said ~~intermediate signal value~~ second portion of the second region  
and said ~~high signal value~~ first portion of the second region, and a logarithmic value  $Y(S_b)$  of  
said output brightness at said boundary value  $S_b$  are represented by the following equations:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$0.70 \times S_{\max} \leq S_b \leq 1.00 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

$$Y_{\max} - 2.15 \leq Y(S_b) \leq Y_{\max} - 1.95$$

where  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic and~~  
 $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output brightness characteristic.

12. (currently amended): The image display method as set forth in claim 8, wherein said  
change rate in said ~~intermediate signal value~~ second portion of the second region is represented  
by the following equation:

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

where  $S_{\max}$  is the ~~maximum value of the image signal in said output brightness characteristic and~~  
G is said change rate.

13. (currently amended): The image display method as set forth in claim 9, wherein said  
change rate in said ~~intermediate signal value~~ second portion of the second region is represented  
by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

C\ where  $S_{\max}$  is the ~~maximum value of the image signal in said output brightness characteristic and~~  
G is said change rate.

14. (currently amended): The image display method as set forth in claim 10, wherein  
said change rate in said ~~intermediate signal value~~ second portion of the second region is  
represented by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

where  $S_{\max}$  is the ~~maximum value of the image signal in said output brightness characteristic and~~  
G is said change rate.

15. (currently amended): In an image display unit, which comprises a brightness circuit  
having an output brightness characteristic in which a logarithmic value of an output brightness  
becomes smaller as a value of an input image signal becomes larger, for displaying a visible  
image that said input image signal represents according to said output brightness characteristic,

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

the improvement wherein said output brightness characteristic in said brightness circuit is set so that a rate of change, which represents a change in the logarithmic value of said output brightness with respect to a change in said input image signal value, in a ~~low signal value~~ first region of said image signal which is below a boundary value  $S_a$  becomes smaller than that in ~~an intermediate and high signal value~~ second region of said input image signal which is above a boundary value  $S_a$ ;

wherein ~~[[a]]~~ the boundary value  $S_a$  between the ~~low signal value~~ first region and the ~~intermediate and high signal value~~ second region is represented by the following equation:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

where  $S_{\max}$  is the maximum value of the image signal in the output brightness ~~characteristic~~ characteristic.

16. (currently amended): The image display unit as set forth in claim 15, wherein said output brightness characteristic in said brightness circuit is approximately linear over approximately the entire ~~intermediate and high signal value~~ second region.

17. (currently amended): The image display unit as set forth in claim 15, wherein a ~~boundary value  $S_a$  between said low signal value region and said intermediate and high signal value region, and~~ a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$  ~~[[are]]~~ is represented by the following equation~~[[s]]~~:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output  
brightness characteristic.

18. (currently amended): The image display unit as set forth in claim 16, wherein  
~~a boundary value  $S_a$  between said low signal value region and said intermediate and high signal~~  
~~value region, and a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$~~   
[[are]] is represented by the following equations:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output  
brightness characteristic.

19. (currently amended): The image display unit as set forth in claim 15, wherein said  
change rate in said ~~intermediate and high signal value~~ second region is represented by the  
following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $G$  is said change rate.



**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

20. (currently amended): The image display unit as set forth in claim 16, wherein said change rate in said ~~intermediate and high signal value~~ second region is represented by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $G$  is said change rate.

21. (currently amended): The image display unit as set forth in claim 17, wherein said change rate in said ~~intermediate and high signal value~~ second region is represented by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $G$  is said change rate.

22. (currently amended): The image display unit as set forth in claim 15, wherein said output brightness characteristic in said brightness circuit is set so that said change rate in the ~~high signal value~~ first portion of the second region of said image signal becomes larger than that in the ~~intermediate signal value~~ second portion of the second region of said image signal.

23. (currently amended): The image display unit as set forth in claim 22, wherein said output brightness characteristic in said brightness circuit is approximately linear over

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

approximately the entire ~~intermediate-signal-value~~ second portion of the second region and over approximately the entire ~~high-signal-value~~ first portion of the second region.

24. (currently amended): The image display unit as set forth in claim 22, wherein a boundary value  $S_a$  ~~between said low-signal-value region and said intermediate and high-signal value region~~, a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$ , a boundary value  $S_b$  between said ~~intermediate-signal-value~~ second portion of the second region and said ~~high-signal-value~~ first portion of the second region, and a logarithmic value  $Y(S_b)$  of said output brightness at said boundary value  $S_b$  are represented by the following equations:

C、  
$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$0.70 \times S_{\max} \leq S_b \leq 1.00 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

$$Y_{\max} - 2.15 \leq Y(S_b) \leq Y_{\max} - 1.95$$

in which  $S_{\max}$  ~~is the maximum value of the image signal in said output brightness characteristic~~ and  $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output brightness characteristic.

25. (currently amended): The image display unit as set forth in claim 23, wherein a boundary value  $S_a$  ~~between said low-signal-value region and said intermediate and high-signal value region~~, a logarithmic value  $Y(S_a)$  of said output brightness at said boundary value  $S_a$ , a boundary value  $S_b$  between said ~~intermediate-signal-value~~ second portion of the second region

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

and said ~~high-signal-value~~ first portion of the second region, and a logarithmic value  $Y(S_b)$  of said output brightness at said boundary value  $S_b$  are represented by the following equations:

$$0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$$

$$0.70 \times S_{\max} \leq S_b \leq 1.00 \times S_{\max}$$

$$Y_{\max} - 0.25 \leq Y(S_a) \leq Y_{\max} - 0.05$$

$$Y_{\max} - 2.15 \leq Y(S_b) \leq Y_{\max} - 1.95$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $Y_{\max}$  is the maximum value of the logarithmic value of the brightness in said output  
brightness characteristic.

C、  
26. (currently amended): The image display unit as set forth in claim 22, wherein said  
change rate in said ~~intermediate-signal-value~~ second portion of the second region is represented  
by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $G$  is said change rate.

27. (currently amended): The image display unit as set forth in claim 23, wherein said  
change rate in said ~~intermediate-signal-value~~ second portion of the second region is represented  
by the following equation:

$$-(3.0/S_{\max}) \leq G \leq -(2.5/S_{\max})$$

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $G$  is said change rate.

28. (currently amended): The image display unit as set forth in claim 24, wherein said  
change rate in said ~~intermediate signal value~~ second portion of the second region is represented  
by the following equation:

$$-(3.0 / S_{\max}) \leq G \leq -(2.5 / S_{\max})$$

in which  ~~$S_{\max}$  is the maximum value of the image signal in said output brightness characteristic~~  
and  $G$  is said change rate.

---